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EXAMINER	
COLUCCI, MICHAEL C	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/649,909	Applicant(s) DHARANIPRAGADA ET AL.	
	Examiner MICHAEL C. COLUCCI	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 17-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 17-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Remarks, filed 01/25/2005, with respect to the rejection(s) of claim(s) 1, 6, 11, and 17 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of "The 1998 BBN BYBLOS Primary System applied to English and Spanish Broadcast News Transcription" Spyros et al., 1999, DARPA Broadcast News Workshop (hereinafter Spyros) and Sukkar US 5440662 A (hereinafter Sukkar).

Re Remarks II- A-C (claim 1 pages 12-14), Examiner believes that Naito and Shao do not properly teach this limitation and are no longer applicable, specifically " creating a gender-independent phoneme model when the difference between the compared female phoneme model and the corresponding male phoneme model is less than predetermined value". While gender dependence and independence models are taught, there exists no mention of its respect gender dependence and independence phonemic model generation. Therefore Spyros has been incorporated and Naito and Shao withdrawn.

Re Remarks page 17, "computing accumulated confidence values" are not identified by the office action. Examiner agrees and has therefore incorporated Sukkar and withdrawn Naito and Wark.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subj7ect matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neti et al. US 5953701 A (hereinafter Neti) in view of "The 1998 BBN BYBLOS Primary System applied to English and Spanish Broadcast News Transcription" Spyros et al., 1999, DARPA Broadcast News Workshop (hereinafter Spyros) and further in view of Kanevsky et al. US 6529902 (hereinafter Kanevsky).

Re claims 1, 6, and 11, Neti teaches a method for generating a speech recognition model, the method comprising:

receiving female speech training data (Abstract, Col. 3 lines 37-49, Col. 4 lines 10-29, male training data, female training data, gender specific phone state models);

generating female phoneme models based on the female speech training data (Abstract, Col. 3 lines 37-49, Col. 4 lines 10-29, male training data, female training data, gender specific phone state models);

receiving male speech training data (Abstract, Col. 3 lines 37-49, Col. 4 lines 10-29, male training data, female training data, gender specific phone state models);

generating male phoneme models based on the male speech training data (Abstract, Col. 3 lines 37-49, Col. 4 lines 10-29, male training data, female training data, gender specific phone state models);

determining a difference between each female phoneme model and each corresponding male phoneme model (Abstract, Col. 3 lines 37-49, Col. 4 lines 10-29, aligning data with gender independent data, male training data, female training data, gender specific phone state models)

However, Neti fails to teach phoneme based models and

creating a gender-independent phoneme model when the difference between the compared female phoneme model and the corresponding male phoneme model is less than predetermined value

Spyros teaches a phoneme based gender independent model creation wherein, input is segmented into two band-specific episodes using a dual-band gender-independent phoneme decoder. Each channel episode is then segmented and gender classified in one step with a dual-gender context-dependent word decoder. Further Spyros teaches Speaker-Independent (SI), Gender-Dependent (GD) bandspecific models are estimated from the training data (Spyros Section 2).

Further, Spyros teaches segments that contain mixed bands and/or genders. The solution is to detect channel changes first, and then detect gender changes within each channel, independently. In the 1998 system we used a dual-band gender independent, context independent phone-class model for band detection, trained using the following

procedure… Spyros teaches training a gender independent (GI), context independent biphone class model, using the above labels (Spyros section 3.4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti to incorporate creating a gender-independent phoneme model when the difference between the compared female phoneme model and the corresponding male phoneme model is less than predetermined value as taught by Spyros to allow for incorporating the use of gender dependent and independent phoneme decoder to create a model based on training data (Spyros Section 2), wherein the need that exists to model gender differences that are not sufficiently modeled by context-dependent variations of Neti can be improved to be phoneme based, such as through the use of Spyros in order to handle non-existent periods of silence by detecting a difference in a channel followed by a difference in gender by first applying a gender dependent model followed by a gender independent model when phonemes can not be aligned and seperated into male and female (Spyros section 3.4).

However, Neti in view of Spyros fails to teach

adding, based on at least one criteria,

one of the gender-independent phoneme model, OR

both the female phoneme model and the corresponding male phoneme model to the speech recognition model

Kanevsky can easily substitute male and female for topics when executing a Kullback-Liebler distance method, wherein Kanevsky teaches referring to FIG. 5, which illustrates on one-way direction process of separating features belonging to different topics and topic identification via a Kullback-Liebler distance method, texts that are labeled with different topics are denoted as 501 (e.g., topic 1), 502 (e.g., topic 2), 503 (e.g., topic 3), 504 (e.g., topic N) etc. Textual features can be represented as frequencies of words, a combination of two words, a combination of three words etc. On these features, one can define metrics that allow computation of a distance between different features. For example, if topics T.sub.i give rise to probabilities P(w.sub.t.vertline.T.sub.t), where w.sub.t run all words in some vocabulary, then a distance between two topics T.sub.i and T.sub.j can be computed as #EQU13##. Using Kullback-Liebler distances is consistent with likelihood ratio criteria that are considered above, for example, in Equation (6). Similar metrics could be introduced on tokens that include T-gram words or combination of tokens, as described above. Other features reflecting topics (e.g., key words) can also be used. For every subset of k features, one can define a k dimensional vector. Then, for two different k sets, one can define a Kullback-Liebler distance using frequencies of these k sets. Using Kullback-Liebler distance, one can check which pairs of topics are sufficiently separated from each other. Topics that are close in this metric could be combined together. For example, one can find that topics related to "LOAN" and "BANKS" are close in this metric, <u>and therefore should be combined</u> under a new label (e.g. "FINANCE"). Also, using these metrics, one can identify in each topic domain textual feature vectors ("balls") that are sufficiently

separated from other "balls" in topic domains. These "balls" are shown in FIG. 5 as 505, 506, 504, etc. When such "balls" are identified, likelihood ratios as in FIG. 1, are computed for tokens from these "balls". (Kanevsky Col. 12 lines 15-56)

Further, Kanevsky teaches another instance of detecting whether a threshold is breached and topic similarity based on training data (Kanevsky Col. 13 lines 7-12 & lines 42-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti in view of Spyros to incorporate adding, based on at least one criteria, one of the gender-independent phoneme model, or both the female phoneme model and the corresponding male phoneme model to the speech recognition model as taught by Kanevsky to allow for the generation of combined data models with similar context such as male and female together (e.g. LOAN and BANKS) and also isolated data such as explicit male and female data (e.g. medical and legal), wherein topics are labeled as a group of phonemes or unigrams utilizing a Kullback-Liebler distance, where one can check which pairs of topics are sufficiently separated from each other provided a subset of k features, that one can define a k dimensional vector allowing computation of a distance between different features in the form of a trained group of model (Kanevsky Col. 12 lines 15-56).

Re claims 2, 7, and 12, Neti fails to teach the method at least one computer readable medium of claim 1, wherein the at least one criteria comprises a threshold value or an upper limit for the total number of phoneme models in the speech recognition model.

Spyros teaches the creation of three models: a triphone within-word Phoneme-Tied Mixture (PTM) model with 50 phonetic codebooks, 256 Gaussians per phone, and approximately 29K mixture weight vectors associated with the codebooks; a quinphone within-word State-Clustered-Tied Mixture (SCTM) model with approximately3500 states, 64 Gaussians per state, and 30K mixture weight vectors; and a quinphone between-word SCTM model with a similar number of parameters (Spyros section 2).

Additionally, Spyros teaches a phoneme based gender independent model creation wherein, input is segmented into two band-specific episodes using a dual-band gender-independent phoneme decoder. Each channel episode is then segmented and gender classified in one step with a dual-gender context-dependent word decoder. Further Spyros teaches Speaker-Independent (SI), Gender-Dependent (GD) bandspecific models are estimated from the training data (Spyros Section 2).

Further, Spyros teaches segments that contain mixed bands and/or genders. The solution is to detect channel changes first, and then detect gender changes within each channel, independently. In the 1998 system we used a dual-band gender independent, context independent phone-class model for band detection, trained using the following procedure… Spyros teaches training a gender independent (GI), context independent biphone class model, using the above labels (Spyros section 3.4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti to incorporate wherein the at least one criteria comprises a threshold value or an upper limit for the total number of phoneme models in the speech recognition model as taught by Spyros to allow for multiple probabilistic models used to differentiate parameters as well as incorporating the use of gender dependent and independent phoneme decoder to create a model based on training data (Spyros Section 2), wherein the need that exists to model gender differences that are not sufficiently modeled by context-dependent variations of Neti can be improved to be phoneme based, such as through the use of Spyros in order to handle non-existent periods of silence by detecting a difference in a channel followed by a difference in gender by first applying a gender dependent model followed by a gender independent model when phonemes can not be aligned and seperated into male and female (Spyros section 3.4).

Re claims 3, 8, and 13, Neti fails to teach the method of claim 1, wherein determining the difference includes calculating a Kullback Leibler distance between the each female phoneme model and the each corresponding male phoneme model.

However, Neti fails to teach phoneme based models and

Spyros teaches a phoneme based gender independent model creation wherein, input is segmented into two band-specific episodes using a dual-band gender-independent phoneme decoder. Each channel episode is then segmented and gender

classified in one step with a dual-gender context-dependent word decoder. Further Spyros teaches Speaker-Independent (SI), Gender-Dependent (GD) bandspecific models are estimated from the training data (Spyros Section 2).

Further, Spyros teaches segments that contain mixed bands and/or genders. The solution is to detect channel changes first, and then detect gender changes within each channel, independently. In the 1998 system we used a dual-band gender independent, context independent phone-class model for band detection, trained using the following procedure… Spyros teaches training a gender independent (GI), context independent biphone class model, using the above labels (Spyros section 3.4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti to incorporate phoneme based models as taught by Spyros to allow for incorporating the use of gender dependent and independent phoneme decoder to create a model based on training data (Spyros Section 2), wherein the need that exists to model gender differences that are not sufficiently modeled by context-dependent variations of Neti can be improved to be phoneme based, such as through the use of Spyros in order to handle non-existent periods of silence by detecting a difference in a channel followed by a difference in gender by first applying a gender dependent model followed by a gender independent model when phonemes can not be aligned and seperated into male and female (Spyros section 3.4).

However, Neti in view of Spyros fails to teach determining the difference includes calculating a Kullback Leibler distance

Kanevsky teaches referring to FIG. 5, which illustrates on one-way direction process of separating features belonging to different topics and topic identification via a Kullback-Liebler distance method, texts that are labeled with different topics are denoted as 501 (e.g., topic 1), 502 (e.g., topic 2), 503 (e.g., topic 3), 504 (e.g., topic N) etc. Textual features can be represented as frequencies of words, a combination of two words, a combination of three words etc. On these features, one can define metrics that allow computation of a distance between different features. For example, if topics T.sub.i give rise to probabilities P(w.sub.t.vertline.T.sub.t), where w.sub.t run all words in some vocabulary, then a distance between two topics T.sub.i and T.sub.j can be computed as #EQU13##. Using Kullback-Liebler distances is consistent with likelihood ratio criteria that are considered above, for example, in Equation (6). Similar metrics could be introduced on tokens that include T-gram words or combination of tokens, as described above. Other features reflecting topics (e.g., key words) can also be used. For every subset of k features, one can define a k dimensional vector. Then, for two different k sets, one can define a Kullback-Liebler distance using frequencies of these k sets. Using Kullback-Liebler distance, one can check which pairs of topics are sufficiently separated from each other. Topics that are close in this metric could be combined together. For example, one can find that topics related to "LOAN" and "BANKS" are close in this metric, and therefore should be combined under a new label (e.g. "FINANCE"). Also, using these metrics, one can identify in each topic domain

textual feature vectors ("balls") that are sufficiently separated from other "balls" in topic domains. These "balls" are shown in FIG. 5 as 505, 506, 504, etc. When such "balls" are identified, likelihood ratios as in FIG. 1, are computed for tokens from these "balls". (Kanevsky Col. 12 lines 15-56)

Further, Kanevsky teaches another instance of detecting whether a threshold is breached and topic similarity based on training data (Kanevsky Col. 13 lines 7-12 & lines 42-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti in view of Spyros to incorporate determining the difference includes calculating a Kullback Leibler distance as taught by Kanevsky to allow for the generation of combined data models with similar context such as male and female together (e.g. LOAN and BANKS) and also isolated data such as explicit male and female data (e.g. medical and legal), wherein topics are labeled as a group of phonemes or unigrams utilizing a Kullback-Liebler distance, where one can check which pairs of topics are sufficiently separated from each other provided a subset of k features, that one can define a k dimensional vector allowing computation of a distance between different features in the form of a trained group of model (Kanevsky Col. 12 lines 15-56).

Re claims 4, 9, and 14, Neti in view of Spyros fails to teach the method of claim 3, wherein the difference is a threshold Kullback Leibler distance quantity.

Kanevsky teaches the Kullback-Leibler distance (Kanevsky Col. 5, lines 9-11) between any two topics is at least h, where h ~s some sufficiently large threshold, also Kanevsky teaches (Kanevsky Col. 12, lines 44-47) that while using the Kullback-Leibler distance, one can check which pairs of topics are sufficiently separated from each other, and that topics that are close in this metric could be combined together).

Kanevsky also explicitly teaches how a difference is sufficient, such as classifying data groups when compared, and also creating independence from classificaiton if there is no topic discovered (Kanevsky Col. 5 lines 8-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti in view of Spyros to incorporate whether the model information is insignificant is based on a threshold Kullback Leibler distance quantity as taught by Kanevsky to allow for an improved language modeling for automatic speech decoding and differentiation between data groups, wherein a sufficiently large threshold indicates either separate or combinational probabilities (Kanevsky Col. 2, lines 50-52).

Re claims 5, 10, and 15, Neti teaches method of claim 1, wherein the female phoneme models, male phoneme models, and gender-independent phoneme models are Gaussian mixture models (Neti Col. 3 lines 50-67).

However, Neti fails to teach gender-independent phoneme models

Spyros teaches a phoneme based gender independent model creation wherein, input is segmented into two band-specific episodes using a dual-band gender-

independent phoneme decoder. Each channel episode is then segmented and gender classified in one step with a dual-gender context-dependent word decoder. Further Spyros teaches Speaker-Independent (SI), Gender-Dependent (GD) bandspecific models are estimated from the training data (Spyros Section 2).

Further, Spyros teaches segments that contain mixed bands and/or genders. The solution is to detect channel changes first, and then detect gender changes within each channel, independently. In the 1998 system we used a dual-band gender independent, context independent phone-class model for band detection, trained using the following procedure… Spyros teaches training a gender independent (GI), context independent biphone class model, using the above labels (Spyros section 3.4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti to incorporate gender-independent phoneme models as taught by Spyros to allow for incorporating the use of gender dependent and independent phoneme decoder to create a model based on training data (Spyros Section 2), wherein the need that exists to model gender differences that are not sufficiently modeled by context-dependent variations of Neti can be improved to be phoneme based, such as through the use of Spyros in order to handle non-existent periods of silence by detecting a difference in a channel followed by a difference in gender by first applying a gender dependent model followed by a gender independent model when phonemes can not be aligned and separated into male and female (Spyros section 3.4).

4. Claims 17-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neti et al. US 5953701 A (hereinafter Neti) in view of Sukkar US 5440662 A (hereinafter Sukkar).

Re claims 17, 21, and 24, Neti teaches a system for recognizing speech data from an audio stream originating from one of a plurality of data classes ([0094]), each data class having a class-dependent phoneme model, the system comprising:

a computer processor (Col. 6 lines 24-49);

a receiving module configured to receive a current feature vector of the audio stream (Col. 6 lines 24-49);

a first computing module configured to compute a current best estimates (Col. 3 lines 50-67) that the current feature vector belongs to one of the plurality of data classes (Col. 5 lines 9-21);

However, Neti fails to teach a second computing module configured to compute an accumulated confidence values for each of the plurality of data class that the current feature vector belongs to each one of the plurality of data classes, the confidence value for each data class of the plurality of data classes based on the current best estimatefor the data class and on previous confidence values for the data class, the previous confidence values associated with previous feature vectors of the audio stream;

a weighing module configured to weigh the class-dependent phoneme models based on the accumulated confidence values; and

a recognizing module configured to recognize the current feature vector (based on the weighted class-dependent phoneme models; and

Sukkar teaches a two-pass classification system and method that post-processes HMM scores with additional confidence scores to derive a value that may be applied to a threshold on which a keyword verses non-keyword determination may be based. The first stage comprises Generalized Probabilistic Descent (GPD) analysis which uses feature vectors of the spoken words and the HMM segmentation information (developed by the HMM detector during processing) as inputs to develop a first set of confidence scores through a linear combination (a weighted sum) of the feature vectors of the speech. The second stage comprises a linear discrimination method that combines the HMM scores and the confidence scores from the GPD stage with a weighted sum to derive a second confidence score. The output of the second stage may then be compared to a predetermined threshold to determine whether the spoken word or words include a keyword (Sukkar Abstract).

Further, Sukkar teaches comparisons amongst all scores to produce the highest likelihood score to classify a keyword from the words present (Sukkar Col 5 lines 14-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti to incorporate a second computing module configured to compute an accumulated confidence values for each of the plurality of data class that the current feature vector belongs to each one of the plurality of data classes, the confidence value for each data class of the plurality of data classes

based on the current best estimate for the data class and on previous confidence values for the data class, the previous confidence values associated with previous feature vectors of the audio stream;

a weighing module configured to weigh the class-dependent phoneme models based on the accumulated confidence values; and

a recognizing module configured to recognize the current feature vector (based on the weighted class-dependent phoneme models as taught by Sukkar to allow for the highest likelihood score selected from a weighted sum of vectors originally obtained from speech (Sukkar Col 5 lines 14-27), wherein speech can be properly classified based on the best confidence score (Sukkar Abstract), thereby improving the probabilistic modeling of Neti to include grouping the highest confidence scores to classify speech and test the reliability of that classification.

Re claims 18, 22, and 25, Neti teaches the method of claim 17, wherein computing the current vector probability includes estimating a posteriori class probability for the current feature vector (Col. 2 lines 1-8))

Re claims 19, 23, and 26, Neti fails to teach the method of claim 17, wherein computing the accumulated confidence level further comprising weighing the current vector probability more than the previous vector probabilities.

Sukkar teaches a two-pass classification system and method that post-processes HMM scores with additional confidence scores to derive a value that may be applied to a threshold on which a keyword verses non-keyword determination may be based. The first stage comprises Generalized Probabilistic Descent (GPD) analysis which uses feature vectors of the spoken words and the HMM segmentation information (developed by the HMM detector during processing) as inputs to develop a first set of confidence scores through a linear combination (a weighted sum) of the feature vectors of the speech. The second stage comprises a linear discrimination method that combines the HMM scores and the confidence scores from the GPD stage with a weighted sum to derive a second confidence score. The output of the second stage may then be compared to a predetermined threshold to determine whether the spoken word or words include a keyword (Sukkar Abstract).

Further, Sukkar teaches comparisons amongst all scores to produce the highest likelihood score to classify a keyword from the words present (Sukkar Col 5 lines 14-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Neti to incorporate computing the accumulated confidence level further comprising weighing the current vector probability more than the previous vector probabilities as taught by Sukkar to allow for the highest likelihood score selected from a weighted sum of vectors originally obtained from speech (Sukkar Col 5 lines 14-27), wherein speech can be properly classified based on the best confidence score (Sukkar Abstract), thereby improving the probabilistic

modeling of Neti to include grouping the highest confidence scores to classify speech and test the reliability of that classification.

Re claims 20 and 27, Neti teaches the method of claim 17, further comprising determining if another feature vector is available for analysis (Col. 6 lines 24-49).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL C. COLUCCI whose telephone number is (571)270-1847. The examiner can normally be reached on 8:30 am - 5:00 pm , Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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